rate frame. The transcoder can take full rate frame and convert this data to ½ (one-half) rate frame. Block **1220** of FIG. **12** then uses the new portion created in block **1320** to replace the original portion.

[0109] Turning to FIG. **14** in addition to other figures, FIG. **14** illustrates a flowchart of a method for retrieving content to be used for the new portion of a media stream. Typically, FIG. **14** is performed before block **1220** of FIG. **12**. In block **1410**, the IOG **160** checks the CDN **110** for content having the required media coding rate for the portion **106**. That is, the CDN **110** has access to a store **117** having media **105** in format**2** **107-2**. For instance, the media stream portion **109** is created using the media **105** in format**1** **107-1** and format**1** **107-1** may be a high definition **720***p* (where "p" stands for progressive) television signal. The format**2** **107-2** could be a version of same media **105** in a smaller format (e.g., **480***i*, where "i" stands for interlaced).

[0110] If the content (e.g., media **105** in format**2** **107-2**) is found in the CDN (block **1420**=yes), in block **1430**, the IOG **160** downloads the content. In block **1440**, the IOG **160** creates the new portion from the downloaded content. It should be noted that this process may be able to be performed if the user is in the "middle" of viewing media, such as in the middle of viewing a video. For instance, if a synchronization frame can be determined, the process should be able to be implemented. Block **1220** of FIG. **12** then uses the new portion to replace the original portion. If the content (e.g., media **105** in format**2** **107-2**) is not found in the CDN (block **1420**=no), the method ends in block **1450** (e.g., and another technique such as the operations in the method of FIG. **5** would be performed).

[0111] The techniques described above can enable a radio network to achieve one or more of the following non-limiting performance gains:

[0112] 1) Sustain cell edge application layer performance of a mobile node based on link layer assisted application content optimization (e.g., trans-coding of video content);

[0113] 2) Enhance effective sector throughput based on link layer assisted application content optimization;

[0114] 3) Optimize application content based on device type and user policies;

[0115] 4) Combine IP offload gateway functionality and link layer assisted application optimization on base station or base station controller; and

[0116] 5) Utilize deep packet inspection along with radio link feedback to optimize end-to-end application performance.

[0117] The examples in FIGS. **1** and **10** used a UMTS-based system. However, the exemplary embodiments are not limited thereto. For instance, FIG. **15** illustrates a simplified block diagram of another system into which exemplary embodiments of the instant invention maybe practiced. The system shown in FIG. **15** is LTE-based. In this example, the mobile node **1590** communicates wirelessly with the eNB (evolved Node B) **1510**. The eNB **1510** communicates with the serving gateway (SGW) **1520**, the mobility management entity **1530**, and the IOG **1560**. The SGW **1520** communicates with the packet data network (PDN) gateway (PGW) **1540**, and both the IOG **1560** and PGW **1540** communicate with a network **1570**. The IOG **1560** includes, in this example, the functionality described above for IOG **160**. Application flow(s) **1565** may be Local IP access (LIPA) traffic or other traffic suitable for IP offloading. The application flow(s) **1580** may be other IP traffic not suitable for IP offloading such as core network traffic. It is noted that the IOG **1560** may be connected to the SGW **1520** and/or the MME **1530**.

[0118] Embodiments of the present invention may be implemented in software (executed by one or more processors), hardware (e.g., an application specific integrated circuit), or a combination of software and hardware. In an example embodiment, the software (e.g., application logic, an instruction set) is maintained on any one of various conventional computer-readable media. In the context of this document, a "computer-readable medium" may be any media or means that can contain, store, communicate, propagate or transport the instructions for use by or in connection with an instruction execution system, apparatus, or device, such as a computer, with one example of a computer described and depicted, e.g., in FIG. **1**. A computer-readable medium may comprise a computer-readable storage medium (e.g., memory or other device) that may be any media or means that can contain or store the instructions for use by or in connection with an instruction execution system, apparatus, or device, such as a computer.

[0119] If desired, the different functions discussed herein may be performed in a different order and/or concurrently with each other. Furthermore, if desired, one or more of the above-described functions may be optional or may be combined.

[0120] Although various aspects of the invention are set out in the independent claims, other aspects of the invention comprise other combinations of features from the described embodiments and/or the dependent claims with the features of the independent claims, and not solely the combinations explicitly set out in the claims.

[0121] It is also noted herein that while the above describes example embodiments of the invention, these descriptions should not be viewed in a limiting sense. Rather, there are several variations and modifications which may be made without departing from the scope of the present invention as defined in the appended claims

What is claimed is:

1. A method, comprising:

presenting to a user by means of a user interface a description of user options to modify a quality of experience of an existing service provided by a radio network for one or more application flows between the radio network and a mobile node used by the user, the options comprising:

making a selection indicating a choice to decline to upgrade the existing service provided by the radio network to an upgraded service provided by the radio network enabled to support the one or more application flows with a higher quality of experience than supported by the existing service provided by the radio network; and

making a selection indicating a choice to upgrade the existing service provided by the radio network to the upgraded service provided by the radio network enabled to support the one or more application flows with the higher quality of experience than currently supported by the existing service provided by the radio network;

in response to selection by the user indicating a choice to upgrade the existing service provided by the radio network to the upgraded service provided by the radio network, performing one or more actions to upgrade the existing service provided by the radio network to the mobile node to the upgraded service; wherein, making a